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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,914	03/02/2004	Fengxia Qi	UAB-17404/22	1392

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EXAMINER	
FORD, VANESSA L	
ART UNIT	PAPER NUMBER
1645	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/790,914	QI ET AL.	
	Examiner	Art Unit	
	Vanessa L. Ford	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

FINAL ACTION

1. This Office is in responsive to Applicant's response filed December 10, 2006. Declaration submitted by Dr. Caufield filed under 37 C.F.R. 1.132 and Haltalin et al, 1973 (Exhibit B) are acknowledged.

Rejection Withdrawn

2. In view of Applicant's remarks the rejection of claims 9-28 under U.S.C. 112 first paragraph, pages 11-14, paragraph 6. is withdrawn.

Rejections Maintained

3. The rejection under 35 U.S.C 102(b) is maintained for claims 9-10 for the reasons set forth on page 3-5, paragraph 4 of the previous Office Action.

The rejection under 102(b) recited in the previous Office action is reiterated below:

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The rejection was on the grounds that Loyola-Rodriguez et al teach a method of treating rats against infection caused by *Streptococcus mutans* by administering mutacin in the drinking water and the diet of these animals (see the Abstract). Loyola-Rodriguez et al teach that mutacin may be a candidate for use in dental caries prevention (see the Abstract). The amino acid sequence as set forth in SEQ ID NO: 2 would be inherent in the teachings of the prior art. Loyola-Rodriguez et al anticipate the claimed invention.

Since the Office does not have the facilities for examining and comparing applicant's method with the method of the prior art, the burden is on the applicant to

show a novel or unobvious difference between the claimed method and the method of the prior art (i.e., that the method of the prior art does not possess the same material method steps and parameters of the claimed method). See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

Applicant's Arguments

Applicant urges that Loyola-Rodriguez et al cannot be used as an anticipatory reference. Applicant urges that the protein described by Loyola-Rodriguez et al has a molecular weight of 6500 daltons and the chemical structure is unknown. Applicant urges that relationship between the comprising language and inherency is unclear. Applicant urges that the protein disclosed in Loyola-Rodriguez et al is larger than the protein (SEQ ID NO:2) used in the claimed method. Applicant urges that the protein of Loyola-Rodriguez et al is isolated for *Streptococcus sobrinus* and mutacin I used in the claimed method is isolated from *Streptococcus mutans*. Applicant urges that the molecular weight and source of the protein used in the claimed method distinguish it from the prior art.

Examiner's Response to Applicant's Arguments

Applicant's arguments filed December 10, 2006 have been fully considered but they are not persuasive.

To address Applicant's comments regarding comprising claim language and inherency, it should be noted that comprising or open claim language means that other components can be contained in a composition. Thus, the claims are not limited to SEQ ID NO:2. Therefore, a protein larger than SEQ ID NO:2 used in the claimed method reads on the claimed invention.

As stated above, Loyola-Rodriguez et al teach a method of treating rats against infection caused by *Streptococcus mutans* by administering mutacin in the drinking water and the diet of these animals (see the Abstract). Loyola-Rodriguez et al teach that mutacin may be a candidate for use in dental caries prevention. Applicant has not provided evidence that the protein used in the claimed method is not the same as the protein used in the method of the prior art. Thus, since the protein (a mutacin) of the prior art is used in a method of treating dental caries (e.g. a method of treating a gram-positive bacterial infection) the sequence as set forth in SEQ ID NO:2 would be inherent in the teachings of the prior art.

To address Applicant's comments regarding source in which the protein is isolated, it should be noted that the claims do not recite the source by of the protein (mutacin) used in the claimed method is isolated.

In view of the above this rejection is maintained.

4. The rejection under 35 U.S.C 112, first paragraph is maintained for claims 9-28 for the reasons set forth on page 4-11, paragraph 5 of the previous Office Action.

The rejection under 112 first paragraph recited in the previous Office action is reiterated below:

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The rejections was on the grounds that the claims are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention.

The claimed invention is directed to methods of treating and preventing gram-positive infections in a subject comprising administering to the subject an effective amount of a purified and isolated peptide having the amino acid sequence as set forth in SEQ ID NO 2 or a pharmaceutically acceptable salt, ester or prodrug thereof.

The claimed invention encompasses a method of treating or preventing all gram-positive bacterial infections.

Pages 22-28 of the instant specification describes the isolation and purification of mutacin I. However, the specification fails to disclose methods of treating or preventing any or all gram-positive infections in a subject. Although the specification contemplates the broad spectrum use of mutacin I can be used to treat against a variety of microorganism, the specification fails to teach or disclose data that demonstrates that the amino acid sequence as set forth in SEQ ID NO: 2 can used to provide treatment or protection against infections caused by any or all gram positive microorganisms. There is no disclosure of subjects that have been immunized using the claimed method nor is there a disclosure of challenge studies that have been conducted to established that the amino acid sequence used in the claimed method has the ability to provide protection against any or all gram-positive infections.

The claimed method encompasses treating and preventing infections caused by all gram-positive bacteria. This includes gram-positive bacteria such as *Bacillus anthracis* and *Clostridium botulinum.* O'Brien et al *(American Family Physicians, May 1, 2003, 67, 9)* teach microbes that are used in bioterrorism include *Bacillus anthracis* and *Clostridium botulinum* (page 1928). O'Brien et al teach that familiarity with infectious agents of highest priority can expedite diagnosis and initial management and lead to a successful public health response to a bioterrorist attack (see the Abstract). O'Brien et al has taught that gram-positive bacteria can be quite difficult to diagnosis as well as manage infections caused by these organisms.

The specification has not shown that mutacin I can be used to treat or prevent infections caused by all gram-positive microorganisms. The claimed invention broadly encompasses <u>any</u> infection or disease caused by <u>any</u> gram-positive microorganism.

The claims also broadly encompass all species within the of *Streptococcus, Staphylococcus* or *Enterococcus* genera. Koch et al (*Vaccine 22, 2004, pages 822-830)* teach that the emergence of resistance against multiple antibiotics and the increasing frequency with which *Enterococcus faecalis* and *Enterococcus faecium* are isolated from hospitalization patients underscore the necessity for a better understanding of the virulence mechanisms of this pathogen and the development of alternatives to current antibiotic treatments (see the Abstract). Koch et al teach that enterococci are intrinsically not as virulent as other gram-positive organisms such as *Staphylococcus aureus*, pneumococci or group A streptococci which makes the study of their pathogenicity more difficult (page 822). Koch et al teach that the rapid increase in

enterococcal strains resistant to vancomycin and other antibiotics and their ability to pass this trait on to other pathogens, i.e. *Staphylococcus aureus* indicates an urgent and expanding clinical problems (page 822).

It should be noted that the instant specification discloses antimicrobial spectrum assays that with a limited set of pathogens that include *Staphylococcus aureus*, *Staphylococcus epidermidis*, enterococci, pneumonococci and Group A streptococci. These studies appear to correlate with *in vitro* studies. The instant specification fails to teach, disclose or correlate the administration of the peptide as set forth in SEQ ID NO:2 (mutacin I) and *in vivo* studies. In other words, the instant specification has failed to disclose administering mutacin I to a subject having a gram-positive bacteria infection and mutacin was successful at treating or preventing the infection. It is unclear from the instant disclosure whether the results from *in vitro* studies can directly correlate to what would be demonstrated *in vivo*.

The above mentioned infections/diseases are only a few of the microorganisms that are encompassed by the claimed invention and represent a small subset of the many diseases that exist that have no vaccine that is effective in treating and/or preventing such infectious diseases. The specification has not shown that mutacin I can be used to treat or prevent infections caused by any gram-positive microorganism much less microorganisms of the genus *Staphylococcus* or *Enterococcus*. The pharmaceutical compositions used in the claimed method would not provide treatment or prevention against any gram-positive bacteria. The specification has not provided enablement for the claimed method since there are no working examples in the instant specification that demonstrate effectiveness of the peptide against all gram-positive microbial infections .nor has the instant specification enabled the use of mutacin I to treat or prevent infections caused by microorganisms of the genera *Staphylococcus* or *Enterococcus*. One skilled in the art would have to possess the knowledge or be provided with sufficient guidance to determine if the pharmaceutical compositions would reach the target microorganisms in order to treat or prevent infection.

Factors to be considered in determining whether undue experimentation is required, are set forth in In re Wands 8 USPQ2d 1400. They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art and (8) the breadth of the claims.

Applying the above test to the facts of record, it is determined that 1) no declaration under 37 C.F.R. 1.132 or other relevant evidence has been made of record establishing the amount of experimentation necessary, 2) insufficient direction or guidance is presented in the specification with respect using the amino acid sequence as set forth in SEQ ID NO:2 to treat or prevent all gram-positive infections *in vivo* and 3) the relative skill of those in the art is commonly recognized as quite high (post-doctoral level). It would require undue experimentation by one of skill in the art to determine whether the pharmaceutical compositions used in the claimed method would be effective in treating or preventing any gram-positive microbial infection or disease. One of skill in the art would require guidance, in order to practice the claimed invention

in a manner reasonable in correlation with the claims. Without proper guidance, the experimentation is undue.

Applicant's Arguments

A) Applicant urges the Examiner has formed an improper rejection. Applicant urges that the claimed invention is fully enabled. Applicant urges that the invention involves the treatment and prevention of gram-positive infection comprising administering to a subject infected with or susceptible to a gram-positive bacterium selected from the genus consisting of *Staphylococcus, Enterococcus* and *Streptococcus pneumoniae.* Applicant urges that the specification states " it has wide spectrum of antimicrobial activity against a wide range of gram-positive bacteria including the multidrug Staphylococci and Enterococci" (page 18). Applicant also states that the instant specification states " that mutacin II is more potent against *Staphylococcus aureus* and *Staphylococcus epidermidis* while both mutacins have equal activities against other pathogens such as enterococci, pneumococci and Group A streptococci (page 33).

B) Applicant urges that the declaration submitted by Dr. Caufield indicates that the peptide as set forth in SEQ ID NO:2 is effective against a variety of gram-positive bacteria including *S. pyogenes, S. pneumoniae*, multiple drug resistant *Staphylococcus aureus*, vancomycin –resistant *E. faecium* and *Bacillus anthracis*.

C) Applicant refers to Loyola-Rodriguz et al for an exemplary teaching with respect to Table 2 of methodologies for measuring the level of success. Applicant urges that

one skilled in the art certainly has the ability to test susceptibility of these pathogens towards an inventive composition without undue experimentation. Applicant refers to the article from A.J. Clinical Pathol, 1973, Haltalin et al,(Exhibit B) to support their position.

Examiner's Response to Applicant's Arguments

Applicant's arguments filed December 10, 2006 have been fully considered but they are not persuasive.

A) It is the Examiner's position that the claimed invention is not enabled by the instant specification. It should be remembered that independent claim 9 encompasses all gram-positive bacteria. The instant specification has not provided enablement to treat or prevent all gram-positive bacterial infections. Pages 12-21 of the instant specification does not enable the treatment or prevention of all gram-positive bacterial infections. The instant specification has provide no experimental examples to demonstrated that the claimed method can be used to treat or prevent all gram-positive bacterial infections. The instant specification merely makes the statement that "…. Mutacin III is more potent than mutacin I against *S. aureus* and *S. epidermidis* while both mutacins have equal activities against other pathogens such as enterococci, pneumococci and Group A streptococci" (page 33). It noted that the pathogens such as enterococci, pneumococci and Group A streptococci do not cover the broad spectrum of all gram-positive bacteria other genera such as *Clostridium*, *Bacillus* and *Listeria*. It should be noted that the claims also recite "prevention of gram-positive infection". It

should be remembered that the term "prevention" or "preventing" encompasses the ability of the specific antigen to induce protective immunity to all gram-positive infection or disease induction. The specification does not provide substantive evidence that the peptides used in the claimed method are capable of inducing protective immunity. This demonstration is required for the skilled artisan to be able to use the claimed method for its intended purpose of preventing all gram-positive infections. Without this demonstration, the skilled artisan would not be able to reasonably predict the outcome of the administration of the peptides used in the claimed, i.e. would not be able to accurately predict if protective immunity has been induced.

B) The Declaration submitted by Dr. Caufield is insufficient to overcome this rejection. The Declaration submitted by Dr. Caufield discloses that inhibition assays (*in vitro* assays) were preformed using, *S. pyogenes, S. pneumoniae*, multiple drug resistant *Staphylococcus aureus*, vancomycin –resistant *E. faecium* and *Bacillus anthracis*. It should be noted that Appendix A submitted with the declaration lacks clarity since the photocopies of the results of inhibition assays are unclear. However, this declaration only encompasses a few species within *the Staphylococcus, Streptococcus, Enterococcus* and *Bacillus* genera and not all species or strains within these genera as encompassed by claim 17. Nor does the data submitted in Appendix A include all gram-positive bacteria as encompassed by claim 9. The declaration data/evidence (in vitro data) is not commensurate in scope with the claimed invention (in vivo method).

The Declaration submitted by Dr. Caufield has failed to provide a correlation between *in vitro* studies and what would be demonstrated *in vivo*. The declaration as well as the instant specification has failed teach or disclose a method of treating or preventing gram-positive infection in a subject (*in vivo*) by administering mutacin I (SEQ ID NO:2) and then challenging the subject to see what level of protection (preventing) or treatment can be obtained. These limitations are requirements of the claimed method. Without this demonstration, Applicant has not met his burden under 35 U.S.C. 112, first paragraph.

C) To address Applicant's arguments regarding testing the susceptibility of a particular microorganism to an inventive peptide (e.g. references to Loyola-Rodriguez et al or the Haltalin et al), it should be remembered that 112 first paragraph requires that the instant specification teach how to "make and use" the claimed invention and not "how to find out how to use the claimed method". Although it is known in the art to test or measure the success of inventive peptide, i.e. administration of SEQ ID NO:2, the instant specification has not demonstrated that the peptide set forth in SEQ ID NO:2 is effective in treating and preventing all gram-positive bacterial infections. It is the Examiner's position that it would require undue experimentation to practice (make and use) the claimed invention based on the teachings of the instant specification.

5. The rejection under 35 U.S.C 102(b) is maintained for claims 9-10 for the reasons set forth on pages 15-16, paragraph 7 of the previous Office Action.

The rejection under 102(b) recited in the previous Office action is reiterated below:

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The rejection was on the grounds that Ikeda et al teach a method of treating rats against infection caused by *Streptococcus mutans* by administering mutacin in the drinking water and the diet of these animals (see the Abstract and page 863). Ikeda et al teach that when water or diet containing the bacteriocin from Streptococcus mutans was administered to animals the caries score of these animals was found to be significantly reduced (see the Abstract). The amino acid sequence as set forth in SEQ ID NO: 2 would be inherent in the teachings of the prior art. Ikeda et al anticipate the claimed invention.

Since the Office does not have the facilities for examining and comparing applicant's method with the method of the prior art, the burden is on the applicant to show a novel or unobvious difference between the claimed method and the method of the prior art (i.e., that the method of the prior art does not possess the same material method steps and parameters of the claimed method). See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

Applicant's Arguments

Applicant urges that Ikeda et al cannot be used as an anticipatory reference. Applicant urges the protein of Ikeda et al is bacteriocin C3603 isolated from the culture supernant of *Streptococcus mutans*. Applicant urges that the C3603 is not equivalent to the protein of SEQ ID NO:2 because the molecular weight of C3603 is

4800 daltons. Applicant asserts that C3603 contains different amino acids than the protein as set forth SEQ ID NO:2.

Examiner's Response to Applicant's Arguments

Applicant's arguments filed December 10, 2006 have been fully considered but they are not persuasive.

It should be remembered that comprising or open claim language means that other components can be contain in a composition. Thus, the claims are not limited to SEQ ID NO:2. Therefore, a protein can be larger than SEQ ID NO:2 or can be comprised within a molecule that has higher molecule weight than SEQ ID NO:2 (e.g. the weight of C3603) used in the claimed method reads on the claimed invention. Further, the pending claims do not recite a specific molecular weight for SEQ ID NO:2.

As stated above, Ikeda et al teach a method of treating rats against infection (dental caries) caused by *Streptococcus mutans* by administering mutacin in the drinking water and the diet of these animals (see the Abstract). Applicant has not provide evidence that the protein used in the claimed method is not the same as the protein used in the method of the prior art. Thus, since the protein (a antimicrobial bacteriocin) of the prior art used in a method of treating dental caries (e.g. a method of treating a gram-positive bacterial infection) reads on the claimed invention.

To address Applicant's comments regarding content of the protein (e.g. amino acids), it should be noted that both the claim protein as set forth in SEQ ID NO: 2 and the bacteriocin of the prior art both comprises the amino acids threonine, serine,

glycine, valine, tyrosine and phenylalanine. It should be noted that the bacteriocin of the prior art comprises aspartic acid, glutamic acid, alanine, methionine, isoleucine, tryptophan, lysine and arginine and these amino acids are comprised in SEQ ID NO:2. However, it should be noted that the claims are not limited to SEQ ID NO:2 and since the claims recited "comprising" or "open claim language" the additional amino acids comprised in the bacteriocin of the prior art does not mean that protein as set forth in SEQ ID NO:2 is not inherently present in the bacteriocin of the prior art.

In view of the above this rejection is maintained.

6. The rejection under 35 U.S.C 102(b) is maintained for claims 9-10 for the reasons set forth on pages 15-16, paragraph 7 of the previous Office Action.

The rejection under 102(b) recited in the previous Office action is reiterated below:

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The rejection was on the grounds that Ooshima et al teach a method of treating rats against infection caused by *Streptococcus mutans* by administering mutacin in the drinking water and the diet of these animals (see the Abstract and page 863). Ooshima et al teach that when water or diet containing the bacteriocin from Streptococcus mutans was administered to animals the dental caries of these animals was found to be significantly reduced (see the Abstract). The amino acid sequence as set forth in SEQ ID NO: 2 would be inherent in the teachings of the prior art. Ooshima et al anticipate the claimed invention.

Since the Office does not have the facilities for examining and comparing applicant's method with the method of the prior art, the burden is on the applicant to show a novel or unobvious difference between the claimed method and the method of the prior art (i.e., that the method of the prior art does not possess the same material

method steps and parameters of the claimed method). See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

Applicant's Arguments

Applicant urges that Ooshima et al cannot be used as an anticipatory reference. Applicant urges the protein of Ooshima et al is bacteriocin C3603 isolated from the culture supernant of *Streptococcus mutans*. Applicant urges that the C3603 is not equivalent to the protein of SEQ ID NO:2 because the molecular weight of C3603 is 4800 daltons. Applicant asserts that C3603 contains different amino acids than the protein as set forth SEQ ID NO:2.

Examiner's Response to Applicant's Arguments

Applicant's arguments filed December 10, 2006 have been fully considered but they are not persuasive.

It should be remembered that comprising or open claim language means that other components can be contain in a composition. Thus, the claims are not limited to SEQ ID NO:2. Therefore, a protein can be larger than SEQ ID NO:2 or can be comprised within a molecule that has higher molecule weight than SEQ ID NO:2 (e.g. the weight of C3603) used in the claimed method reads on the claimed invention. Further, the pending claims do not recite a specific molecular weight of SEQ ID NO:2.

As stated above, Ooshima et al teach a method of treating rats against infection (dental caries) caused by *Streptococcus mutans* by administering mutacin in the drinking water and the diet of these animals (see the Abstract). Applicant has not provide evidence that the protein used in the claimed method is not the same as the

protein used in the method of the prior art. Thus, since the protein (a antimicrobial bacteriocin) of the prior art used in a method of treating dental caries (e.g. a method of treating a gram-positive bacterial infection) reads on the claimed invention.

It should be noted that Ooshima et al do not specifically teach that the amino acids contain within C3603 but it cites the teachings of the Ikeda reference which discloses these amino acids. The comments regarding the amino acids contained in C3606 have been addressed under the Ikeda et al rejection which is set forth in paragraph 5 of this Office action.

In view of the above this rejection is maintained.

Status of Claims

7. No claims are allowed.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

9. Any inquiry of the general nature or relating to the status of this general application should be directed to the Group receptionist whose telephone number is (703) 308–0196.

Papers relating to this application may be submitted to Technology Center 1600, Group 1640 by facsimile transmission. The faxing of such papers must conform with the notice published in the Office Gazette, 1096 OG 30 (November 15, 1989). Should applicant wish to FAX a response, the current FAX number for the Group 1600 is (703) 872-9306.

Any inquiry concerning this communication from the examiner should be directed to Vanessa L. Ford, whose telephone number is (571) 272-0857. The examiner can normally be reached on Monday – Friday from 9:00 AM to 6:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Siew, can be reached at (571) 272-0787.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov./>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vanessa L. Ford
Biotechnology Patent Examiner
March 3, 2007

NITA MINNIFIELD
PRIMARY EXAMINER